

MRI IN ACHILLES TENDON INJURIES

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿وَأَنْزَلَ اللَّهُ عَلَيْكَ الْكِتَابَ وَالْحِكْمَةَ وَعَلَّمَكَ مَا لَمْ

تَكُنْ تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا﴾

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Abstract

The prevalence of Achilles tendon injuries is a common musculoskeletal disorder affecting the foot in athletic and non-athletic population. The Achilles tendon is the thickest and strongest tendon in the human body. It is the major plantar flexor of the foot and contributes to the maintenance of the upright position.

MRI is an excellent imaging modality for suspected Achilles tendon lesions due to its accuracy, efficiency, multiplanar imaging capabilities and excellent soft tissue characterization.

Continuing advances and learning curve in clinical tests enable evaluation of Achilles injuries; however MRI examination allows a global evaluation of the bones, tendons, ligaments, and other structures with a single examination that exceeds the capabilities of all other available clinical tests. MRI provides details that implies significantly on the management being operative or nonoperative.

Key Words: Achilles tendon lesions - MRI - clinical Tests.

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List of Abbreviations

Abb.	Full term
AOFAS	American Orthopedic Foot And Ankle Society
AP	Anteroposterior
AS	Ankylosing Spondylitis
AT	Achilles Tendon
CT	Computed Tomography
EFOV	Extended Field Of View
FH	Familial Hypercholesterolemia
FHL	Flexor Hallucis Longus
FOV	Field Of View
GE	Gradient Echo
Hz	Hertz
mA	Milli Ampere
MRI	Magnetic Resonance Imaging
N.	Number
ROI	Region Of Interest



List of Abbreviations

Abb.	Full term
SD	Standard Deviation
SE	Spin Echo
STIR	Short Tau Inversion Recovery
T	Tesla
T1WI	T1 Weighted Image
T2WI	T2 Weighted Image
US	Ultrasound

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Introduction

The Achilles tendon is the thickest and strongest tendon in the human body. It is the major plantar flexor of the foot and contributes to the maintenance of the upright position. It originates from the aponeuroses of the medial, lateral gastrocnemius and soleus muscles (triceps surae) and is inserted into the posterior calcaneal tuberosity (*Davies, 2005*).

The Achilles tendon is the most frequently injured ankle tendon. It lacks a tendon sheath; however it has a peritenon whose vascular system extends both within and outside the tendon. Achilles tendon injuries frequently occur in athletes, as well in the general population (*Klauser, 2011*). Its injuries may be classified as non-insertional or insertional. The former group includes partial or complete thickness tear. Achilles tendon tear is usually 2–6 cm above the insertion of the tendon on the calcaneus (*Rosenberg et al., 2000*).

MRI has been widely used in confirming the diagnosis of Achilles tendon injuries. It is an excellent technique for those cases where the diagnosis is uncertain; it is the most suitable investigation for assessment of soft tissue for persistent foot and ankle pain following injury,



Owing to its multiplanar imaging capabilities and excellent soft tissue characterization.

However; in this study, clinical diagnosis of Achilles tendon Tear could be primary based on specific clinical tests followed by MRI examinations as a reference that allow a global evaluation of the bones, tendons, ligaments, and other structures with a single examination that exceeds the capabilities of all other available clinical tests (*Wijesekera et al., 2011*).



Aim of the Work

The aim of this study is to compare the value of MR imaging in clinically diagnosed Achilles tendon rupture and to investigate reliability of clinical examination tests.